THE ECONOMICS OF THE LONGLINE INDUSTRY IN THE PACIFIC ISLANDS: WILL IMPLEMENTING THE NATIONAL TUNA MANAGEMENT PLANS LEAD TO LONG-TERM SUSTAINABLE FISHERY? A CASE STUDY OF FIJI

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ABSTRACT

The small to medium-scale tuna longline industry targets the fresh chilled sashimi markets. This fishery is seen as the major avenue for the development of the domestic tuna industry in the Pacific Islands. The capital and technology requirements for the longline industry are relatively less compared to the purse seine fishery. A number of the Pacific Island countries have already developed domestic longline tuna fishery while others are in the process. Much of the longline fishery initiatives are nationally driven based on the sovereign rights granted under the Law of the Sea Convention and through the establishment of the national tuna management plans. This paper is a case study of the development and economics of the longline fishery in Fiji. It critically analyses the implications of the policy regime initiated under Fiji's National Tuna Management Plan. There is a need for greater co-operation between various stakeholders for the industry to remain viable. The paper also points out that the tuna management plans also need to focus on management beyond national jurisdictions. Suggestions to this effect are elaborated.

Keywords: longline tuna industry, national tuna management plan, regional co-operation

BACKGROUND

The dependence of Pacific Island Countries upon marine resources has been a vital part of their social and economic development. As population increases, this dependence has become even more critical. Being small islands with limited land resources, the ocean provides the greatest opportunities for economic development. Tuna has been the major ocean resource of economic importance for the Pacific Island countries. For many smaller islands, tuna fisheries are the only means for their economic development.

The Exclusive Economic Zone of the Pacific Island Countries covers about 50% of the Western and Central Pacific Ocean but provides some 65% to 75% of the total regional tuna catches [1]. The Western and Central Pacific currently has the largest tuna resources in the world [2]. The tuna catch represents 75% of the total estimated Pacific Ocean catch by volume and 50% of the estimated world tuna catch [3].

The major species harvested from the region are skipjack (*Katsuwonus pelamis*), yellowfin *(Thunnus albacares),* bigeye *(Thunnus obesus*), and albacore (*Thunnus alalunga*) and the major fishing methods used are purse seine, longline and pole and line. Skipjack tuna has been the dominant species caught followed by yellowfin. Purse seine contributes to the largest portion of the catch. In 2002, longline fishery accounted for 11% of the total catch while purse seine contributed 58% of total tuna catch in the WCP Ocean [3].

Much of the catch is harvested by Distant Water Fishing Nations (DWFNs) and is destined directly for overseas markets and destinations. The industry is thus characterised by foreign fishing vessels fishing under access agreements, domestic-based foreign vessels and local fishing vessels. The latter two vessel

categories aim to supply local canneries and processing plants for eventual export. The development of domestic tuna harvesting and processing industries has been a major goal of the Pacific Island countries. These development aspirations figure highly in the national strategic development plans and national tuna management plans in a number of the Pacific Island countries.

SCOPE OF THE STUDY

This study aims to analyse the policy prescriptions under the National Tuna Management Plans to determine whether the goal of optimising the long term sustainable benefits from the tuna fisheries within the EEZs can be achieved. The case of the domestic longline fishery, which is seen as a major avenue for current domestic development, is analysed. The paper points out that there is a need for greater co-operation between the various stakeholders in the industry and that the National Tuna Management Plans should also seek to address regional issues that can affect the viability of national fisheries. In doing so, the Tuna Management Plans can further provide a framework for the practical integration of national and regional fisheries policies. The case study of Fiji Islands provides an example of how regional influences can affect the status of national fisheries. Thus the effectiveness of national management plans can be easily undermined.

PACIFIC ISLANDS DOMESTIC DEVELOPMENT INITIATIVES

Since the late 1970s following the declaration of the extended zones of jurisdiction, the Pacific Island countries adopted a number of national and regional strategies to develop their tuna industries with the goal of deriving maximum benefits from their tuna resources. Developments have included establishment of national fishing fleet, construction of shore-based infrastructure and investments in the processing sector.

National fleet operations established in Fiji, Solomon Islands and Kiribati encountered several problems such as limited managerial and technical skills, high operating costs, variable catch rates, fluctuating market prices and poor management [4]. The cannery operations in Fiji and the Solomon Islands have relied heavily on government support. Investments in shore-based infrastructure in the Federated States of Micronesia, Kiribati and the Marshall Islands have also resulted in major losses. This has led some studies to suggest that the comparative advantage to the Pacific Island countries lie in providing foreign fishing vessels with access to the fisheries through access agreements rather than by developing a domestic industrial base [5] [6].

While the realisation of benefits to the individual countries comes at a considerable cost, the region still continues to rely on tuna fisheries as an important avenue for national economic development. However, much of the development effort in the 1990s had sought to bring about structural changes to the industry through the reduction in direct role of governments and by encouraging private sector development.

Development in the fresh and chilled tuna market for sashimi has seen an increase in small to medium scale domestic longline fishery in a number of Pacific Island countries. The capital and technology requirements for this longline industry are relatively less compared to the purse seine fishery. There is also an increase in the number of foreign longline vessels that have re-located to Pacific Island countries either under joint venture or as chartered or leased vessels. Table I shows the current tuna fishing and processing initiatives in the Forum Fisheries Agency member countries[i]. From Table I, it is evident that most of the Forum Island Countries have embarked on domestic longline industry. Except for Tuvalu, Niue and Nauru, there is some processing facility for handling sashimi tuna in the Forum Island Countries

While there is no current processing facility in Vanuatu, export trials on fresh and chilled tuna have been carried out by a few private interests.

NATIONAL TUNA MANAGEMENT PLANS

To achieve sustainable development of national tuna fishery, a number of Pacific Island countries have established or are in the process of establishing national tuna management plans (Fiji, Papua New Guinea, Vanuatu, Federated States of Micronesia, Cook Islands, Kiribati, Niue and Tonga). The management plans are initiated because of the need to develop a sustainable tuna industry by taking into account management and conservation aspects of the fishery. This results from the international and regional legal obligations for tuna resource management, as well as from the need to create employment and generate economic benefits. National economic strategy plans provide the strategic direction for domestic tuna industry development.

The management plans aim to place limits on the amount of catch or effort or both and focus on capacity building and infrastructure development. These measures are seen as a means to increase domestic participation to strengthen domestic industrial base. The plans outline the specific government policies and priorities and intent to establish a government and industry consultation mechanism.

Table I: Summary of Current Domestic Tuna Fisheries Development Activities in Selected FFA Member States

Country	Domestic Fishing Activities	Fish Processing/other activities
Cook Islands	Local small-scale longlining for sashimi tuna - locally-based foreign fishing vessels - locally owned companies, joint-ventures	3 packaging facilities for sashimi exports
Fiji	Domestic longlining - locally-based foreign vessels - locally owned vessels - foreign longliners servicing local processors	-about 24 private exporting companies registered for sashimi tuna to Japan, US and Europe - Pafco Fishing Co (current cannery operations are scaled down) - facility leased to US company for export of frozen loins to US
FSM	Domestic fleet of longline and purse seine vessels - domestic owned longline vessels - locally-based longline and purse seine vessels	- 4 packaging facilities for sashimi tuna to Japan - transshipment facilities, cold storage
Marshall Is	- Large foreign purse seine fleet supplying overseas processors - Domestic-based foreign longline vessels	-loining plant - transshipment - 2 sashimi exporting facilities. Mostly exports to Japan, Guam, US
PNG	- Locally-based philipino purse seine vessels serving local cannery - Domestic-based foreign longline - Domestic-owned longline vessels	- RD cannery - loining plant - 7 sashimi packaging facilities for exports to Japan
Kiribati	- one domestic-based foreign purse seine vessel - plans to develop artisanal longline craft	- transshipment - freezing and cold storage - 2 export and packaging facilities for exports to Hawaii (Christmas Is)
Samoa	Small scale artisanal fleet	- 4 packing facilities for sashimi export to US - frozen albacore to PagoPago canneries

Palau	Domestic-based foreign longline vessels	2 packaging facilities for sashimi exports to Japan, Guam, US
Solomon Islands	- Domestic-based foreign longline vessels - Domestic-based foreign purse seine vessels	-Soltai Cannery - One private company exporting sashimi tuna to Japan
Nauru	Artisanal/ subsistence	No processing
Tuvalu	Artisanal/ subsistence	No processing
Niue	Plans to start small-scale longlining	No processing
Vanuatu	Domestic-based foreign vessels using Vanuatu Flag	No processing
Tonga	- Government-owned longline vessel - Domestic artisanal fleet - Domestic based foreign vessels under Tongan Flag	- four private companies exporting sashimi tuna to US - frozen albacore to PagoPago cannery

Sources: Personal Communication – Josie Tamate, Project Economist FFA, June 2003; Gillett, R. Domestic Tuna Industry Development in the Pacific Islands: the current situation and considerations for future development assistance, FFA Report 03/01, Forum Fisheries Agency, Honiara, 2003, p.17.

CASE STUDY OF FIJI ISLANDS

Fiji Islands general

Fiji is an archipelagic State comprising of about 322 small islands (lying between latitude 12º – 22º south and longitude 177º west and 174º east, including Rotuma)[7]. The total land area is 18,272 square kilometers and the EEZ is about 1.3 million square kilometer [7]. The EEZ is the eight largest in the South Pacific region and represents around 4 % of the total in-zone area [8]. The EEZ has a common boundary with Vanuatu, Tonga, New Caledonia, Solomon Islands, Tuvalu, Wallis & Futuna and has more than 40 % of its boundary bordering international waters [8]. Fiji has a standard of living of a lower-middle income developing country [9]. The GDP per capita in 2002 at market prices was estimated to be F$ 4,133 or about US$ 2066.50 [10].

Fresh/ chilled Tuna Longline Industry

In the early 1980s, fresh tuna longline by Japanese using medium sized vessels had been successfully operated in the Micronesian Islands. By 1986, private pole and line and deep-sea fisheries operators moved towards establishing fresh/ chilled tuna longline industry primarily for the Japanese sashimi market.

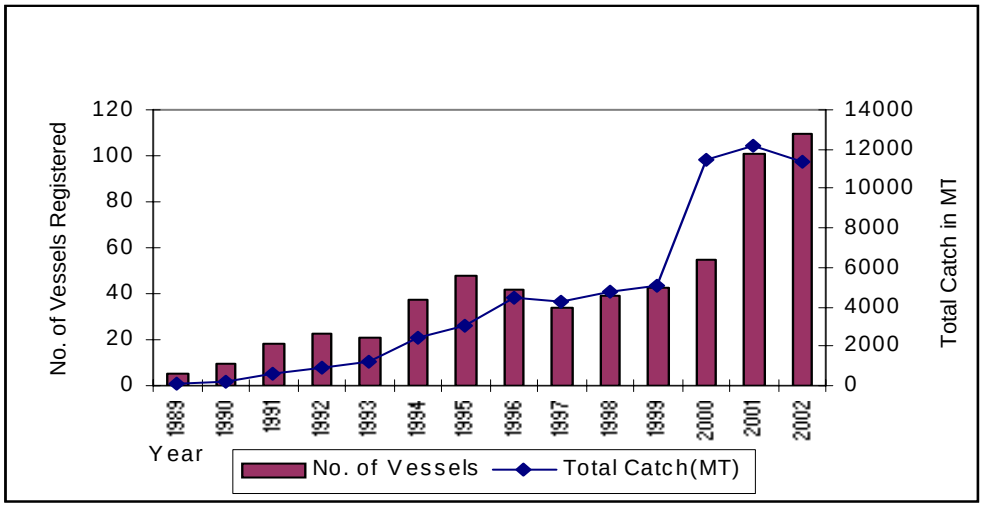
In 1987, following the coups, the Fiji dollar was devalued[ii] which provided the price advantage to supply fresh and chilled tuna for the Japanese sashimi market [11]. The devaluation also provided additional air routes to Japan with increase in tourists flows that consequently increased the cargo space for airfreight to Japan. The Fiji government had also begun its economic reform around the same period to boost economic growth. Focus was on export-oriented development of primary industries with private sector to play a key role. This therefore provided further incentives for the longline industry to develop. Incentives such as duty exemptions on imports of specialised fishing equipment, bait, duty concessions on import of fishing vessels, exemption of duty on fishing vessels under contract to local fish processors, duty rebate on fuel and income tax concessions were granted. A tax-free status was also granted in 1997 to assist

local operators. Since the start of the industry, fish exporters have been able to further lobby government for a range of concessions and the industry has also benefited from the concessional licensing fee.[iii]

The longline industry therefore expanded until 1995. Late 1996 the limits on airfreight space were experienced and operating difficulties encountered by some operators. Weaker Japanese prices were experienced because of weakening of Japanese economy due to the Asian Crisis [12]. The difficulties were further exacerbated in 1997 when the catch of large yellowfin and bigeye tuna contracted. The industry picked up again in 1998 with a devaluation of the Fiji dollar in March of 1998 by 20 % and catches also improved during the year [12].

According to the Fisheries Division records, there were 19 companies registered as fresh tuna exporters in 2001. By the end of 2003, the number of sashimi tuna exporters increased to 34. There are currently ten major companies that have relatively large processing and packaging establishments and who operate more than three longline fishing vessels of their own. Figure 1 shows the catch for the fresh and chilled tuna by longline vessels. The catch peaked in 2000 and has remained at a high level although in 2002 there has been a slight decline. Figure 1also shows that the numbers of vessels have gradually increased except for a decline in 1997. Catch of yellowfin and bigeye has fluctuated while albacore catches show an increase in production in figure 2.

Figure 1: Total Fresh Tuna Landings by Longline Vessels in Fiji



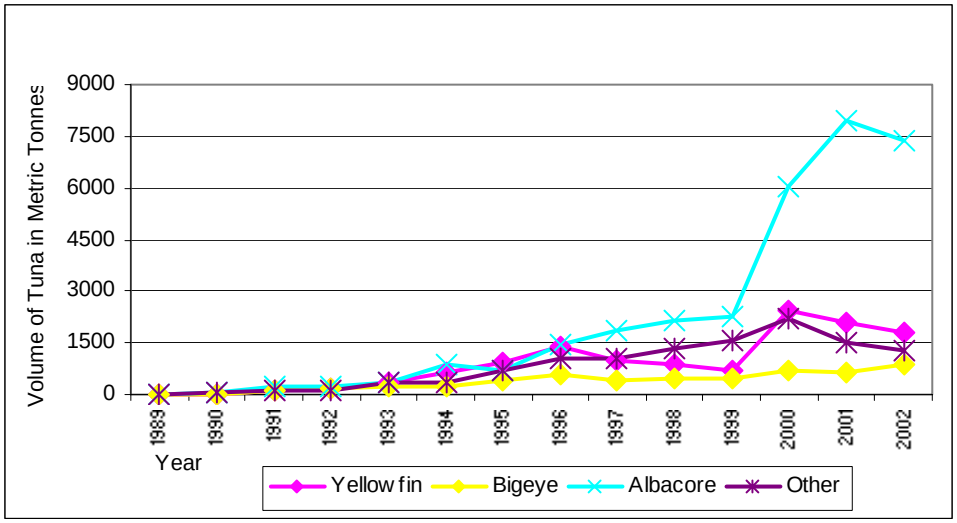
Source: Fiji Fisheries Division Annual Reports

Figure 3 shows the estimated value of exports of fresh fish. This largely consists of fresh and chilled tuna but also include some reef finfish as well.[iv] The major markets for fresh tuna are Japan, Hawaii and more recently to Europe.

The Offshore Fisheries Industry Council[v]has expressed concerns over the expansion of the domestic longline industry by increase in the number of new foreign operators (mostly from China) setting up

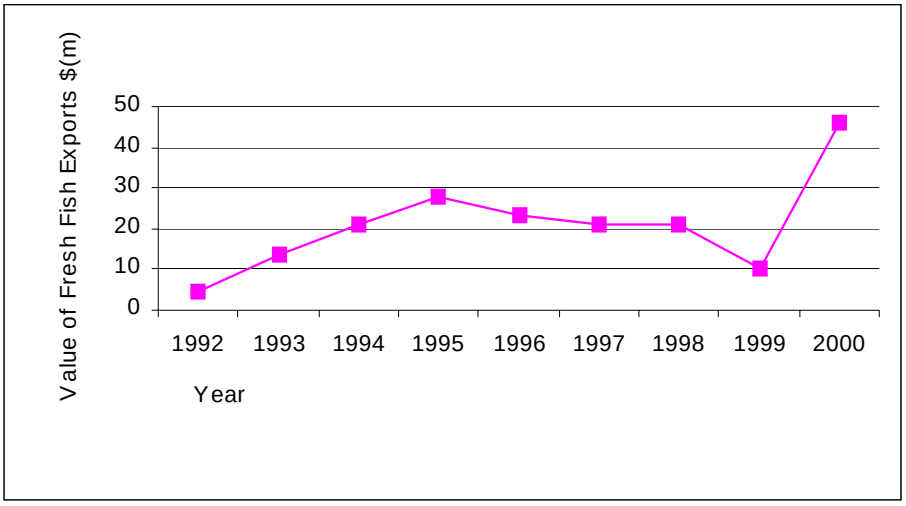
joint-ventures some of whose operations they claim are sub-standard and does not meet the quality standards required.[vi]

Figure 2: Total Landings of Fresh Tuna by Species in Fiji (MT)



Source: Fiji Fisheries Division Annual Reports.

Figure: 3 Value of Fresh Fish Exports from Fiji $(M)



Source: Fiji Islands Bureau of Statistics

This poses a high risk of loss of market and taints the reputation of Fiji as a supplier in the fresh fish market.[vii] This has also created competition for air cargo space and according to most of the current

operators, this has become a major constraint to the development of longline industry in Fiji. Other problems include congestion and inadequate facilities to offload catch, limited effort to mobilise the institutional framework for meeting the quality standards required in the EU and US markets. [viii] In 2001, the number of processing licenses and foreign vessels with domestic joint ventures or on contracts within the fresh sashimi longline industry increased considerably. After much protest by Offshore Fishery Council and with the New Tuna Management Plan in place, the number of licenses in 2002 period was reduced and the license fee substantially increased.

The longline industry so far has had an overall positive experience, in that the industry has expanded over the years and has stabilised because of constraints on airfreight space to major market destinations. Major factors that have contributed to this domestic development has been the government incentives such as tax and duty exemptions and devaluations of the Fiji dollar that had provided the competitive advantage. Longline operations are carried through out the year unlike the case of skipjack fishery (which was seasonal) although catch levels and catch composition are sensitive to changes in prices. In principle, such government incentives help towards the development of the industry and once the industry takes-off, such assistance is withdrawn. However, in the case of the longline industry, these incentives have continued for some time and the government through its foreign investment package continues to further promote such activities. The Offshore Fisheries Council as the industry representative also presents a strong lobby group who continues to push for such benefits. While there are positive effects of this domestic development through creation of jobs and linkages to the economy, the actual real benefits that accrue to the economy and costs associated with loss of government revenue through taxes and resource rent has not been comprehensively determined.[ix]

As a result, the apparent profits enjoyed by some exporters have also heightened the expectations of other prospective investors. This has initiated a further cause for a new domestic development policy.

National Tuna Management Plan – Policies

To maximise the sustainable benefits from tuna resources the objectives of the Tuna Management Plan aim to set a licensing policy that will not damage the stocks and also address social inequalities. [x] Specific limits are placed on catch levels and a preferential license criterion has been established. The Plan states that priority for licenses will be given to local individuals or companies who are already in the industry and the indigenous Fijians.[xi] Therefore the criteria includes nationality, history of fishing activities and investment levels to determine the eligibility [13]. Within the limits of the number of licenses issued, an application by an indigenous Fijian or company that is minimum 51% owned by an indigenous Fijian is automatically eligible for an offshore license for tuna longlining [13].

Under the licensing fee structure, the Plan places priority to Fiji flagged vessels, vessels with Fijian crews and vessels that are Fijian owned. To encourage the use of Fiji-owned vessels, a rebate of $10,000 applies to use of vessels that are at least 51 % Fiji owned [13]. Indigenous Fijian vessels are not subject to any access fee but pay a $6,000 management fee which is compulsory for all fishing vessels applying for offshore licenses. To provide relief in the first year of the introduction, access fee for all Fiji owned vessels are reduced by 50% while all foreign owned vessels are subject to full access fee.[xii]

Among other domestic development strategies include development of a fisheries training school to meet the technical and managerial skill requirements of the domestic industry. The deployment of Fish Aggregation Device (FAD) into rural fishing areas to enable more Fijians to participate in the development of the tuna industry and the setting up of a revolving fund to provide seed capital to support

indigenous Fijians to establish fishing businesses. This is closely related to government's current programme to assist small-scale fishers through training, provision of ice supplies and subsidized loans for purchase of motorized boats and the deployment of FADs.

The above initiatives show that while there is a domestic tuna industry in Fiji, domestic development aspirations are yet to be fulfilled. This stems from the economic gap between indigenous population and other non-indigenous nationals that currently control the fresh tuna longline industry. The tuna industry in Fiji now faces two parallel developments: a mature longline industry with substantial capital investment, and government's new policy to address domestic development issues from a social perspective. In order to achieve such aspirations of tuna industry development in Fiji, government must find a means to mutually integrate the two parallel developments otherwise each may inhibit the development of the other.

Status of tuna stocks

The scientific assessment of tuna stocks has been developed for three main species that are caught in Fiji EEZ: yellowfin, bigeye and albacore. These stock assessments undertaken by the Secretariat of the Pacific Community (SPC) incorporate tagging data, length and frequency of catch and effort data for each of the main methods and area fisheries. The SPC model includes a spatial structure that divides the stock into fishery regions [14]. These regions are relatively broad and the areas including Fiji EEZ also incorporates the fisheries operating in other adjacent EEZ and international waters [14]. Therefore there are no specific stock assessment model for individual countries but the regional model provides a regional perspective of the current status of the stock and, thereby enable inferences to be made concerning the status of the fishery operating in Fiji EEZ.

Bigeye – Bigeye is a relatively slow growing species that are less resilient to exploitation and scientific assessments indicate that their geographical distribution is known to be continuous throughout the ocean [15]. There has been a constant increase in fishing mortality on juvenile and adult age classes since the beginning of the fishery. First in the 1990s, the longline fishery targeted adult bigeye, then there was increase in juvenile catch by increase in purse seine which also used drifting FADs and more recently with increase catches in Philippines and Indonesia is considered to have a high impact on the stock [15]. The scientific advice on the bigeye suggests that there should be no further increase in the fishing mortality rate of bigeye [15]. Current level of exploitation appears not to be sustainable in the long term unless the recent high level of recruitment is maintained in the future [16].

In Fiji, from the early 1990s to 2002, standardised catch rates of bigeye in Fiji's EEZ declined by about 50% [14]. During the same period, there was a steady decline in the proportion of larger bigeye in the catch and small fish dominated the recent catches [14]. Figure 5 shows the catch of various species in Fiji EEZ. From the graph, such details are not apparent because vessel numbers have increased and so while catch shows an increase, the catch rates have declined.

Yellowfin – The majority of the catch of yellowfin is taken from the equatorial region where they are harvested by purse seine, longline and other gear. Purse seine accounts for about 20 to 25% of the yellowfin catch. While yellowfin tuna is strongly influenced by oceanographic conditions, for stock assessment purposes, they are considered to constitute a single stock in the WCP Ocean.[xiii] Estimates of the current level of depletion of yellowfin in the WCP Ocean indicate that while current biomass is 20-35% less than the level in the absence of fishing, depletion levels in the equatorial regions are close to 50% [15]. Increased fishing mortality is attributed to increased catches of juvenile yellowfin in purse

seine fishery, increase in the domestic fishery of Indonesia and Philippines and the decline in biomass over the last decade [15].

While catch rates are seasonally variable in Fiji, there has been no strong trend in the relative catch rates from 1990 to 2002 [14]. However, there has been a general decline in the proportion of larger fish in the catch since the mid 1990s [14].

Albacore – Albacore tuna is a slow growing species with a discrete stock in the South Pacific Ocean. Mature albacore (4-5 years) spawn in the tropical and sub-tropical waters during Austral Summer, with juveniles recruiting to surface fisheries in New Zealand coastal waters and around sub-tropical convergence zones in Central Pacific about 2 years later [15]. From this region, albacore gradually disperse to the north, but may make seasonal migrations between tropical and sub-tropical waters [15].

While SPC assessments indicate that albacore stocks are not overfished, the increase in the longline fishery in the Central Pacific needs to be carefully monitored [15]. The impact on the stock can be higher because of the selectivity of the longline gear towards older age classes. The standardised catch rates of albacore in Fiji from 1996 to 2000 increased and then declined by 30% from 2000 to 2002. These variations in catch were attributed to oceanographic conditions [14]. Thus, while albacore fishery in Fiji is not threatened, the increase in fishery in the neighbouring zones can have a direct impact on the level of stock available. Figure 5 shows that albacore has now become the dominant longline fishery for sashimi tuna.

Interaction between Longline and Purse Seine Fishery

The increase in catches in the WCP Ocean is a result of both intensification and expansion of existing fisheries. Not only there is now an overlap between large-scale and small-scale fisheries; there is also an increase in competition in the use of different gear techniques that target similar stocks. Increase in the adoption of deeper fishing techniques and FADs in the purse seine operations has led to increase catches of juvenile big eye and yellowfin tuna which have been the major target species for domestic longline industry.

The status of national EEZ stock assessments closely mirrors the regional stock assessments. The decline in the catch rates of high value big eye tuna in Fiji indicates the indirect impact of purse seine fishery in the equatorial region to the status of big eye fishery in Fiji. Likewise the intensification of fishing effort in the equatorial region of both longline and purse seine has also contributed to smaller size of yellowfin caught in Fiji EEZ.

In the case of albacore fishery, which has become the major species caught by the longline vessels in Fiji, stocks are not currently overfished. However, the intensification of fishing effort in the Central Pacific area needs careful monitoring if the fishery is to remain sustainable in the long term.

National Tuna Management Plans and Regional Arrangements

In the National Tuna Management Plans, the major focus is on national management measures and issues in order to achieve the national development goals. While there is a general awareness on the highly migratory nature of tuna stocks there are no specific strategies focussed towards co-operative management of the longline fishery or attempts to harmonise policies with the purse seine fishery. The approach to regional management is therefore not well integrated, and rather compartmentalised. Results

from tuna stock assessments already indicate the close interaction between the longline and purse seine fishery.

The Palau Arrangement is a sub-regional management arrangement for the purse seine fishery in the Parties to the Nauru Agreement countries. The possibility of integrating the management of the longline fishery with the purse seine fishery would provide for a more effective means of managing the tuna fishery in the in-zone areas. Integrated management can ensure that the domestic longline fishery is not threatened by the over-exploitation of juvenile big eye and yellowfin stock. National Tuna Management plans should also include strategies towards a regional or sub-regional management regime for the longline fishery since the longline fishery is a higher value fishery in a number of the Pacific Island countries. In doing so, not only there will be a clear national policy commitment towards achieving long term sustainable fisheries but it would also enhance current regional co-operative efforts on monitoring and enforcement measures coordinated under the Forum Fisheries Agency.

Marketing and Transportation

The major focus of the Tuna Management Plans on national issues, limits seeking alternative strategies such as regional and sub-regional approaches on marketing and transportation. Some countries have access to relatively good infrastructure for handling; marketing and air freight while other island countries may have severe limitations in that respect. Some countries have rich tuna resources while others have moderate levels of tuna in their EEZs. Fiji and Tuvalu are examples of this type of contrasting scenarios. The island countries also target the same markets such as Japan or the US. Individually they represent fragmented small suppliers and lack economies of scale. The feasibility of co-operative efforts by the industry in marketing and transportation and industry development could be also pursued.

CONCLUDING COMMENTS

While it is generally understood that regional arrangements are needed for the management of tuna in the Pacific Islands, often such regional strategies are limited to compliance and enforcement measures. Management measures on limiting catch and effort also need greater harmonisation between gear types and among species throughout the region in order to ensure the long-term sustainability of the domestic longline fishery. Industry development can also be further strengthened through greater regional co-operation by identifying the various comparative advantages to achieve economies of scale in industry development. The national tuna management plans therefore can be made more effective by integrating regional aspects of resource management and infrastructure demands within the national policy framework for the tuna industry.

ENDNOTES

[i] These include – Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

ii.The Fiji dollar was devalued in two steps by 30% in an attempt to stem the capital flight. This depreciation in the real effective exchange rate boosted Fiji's competitive position to re-orient the economy towards export development.

[iii] For example, fuel rebate initially applied to foreign vessels, but was later extended to local vessels and import of fishing vessels had a 5% duty while import of foreign vessels under contract for more than a year was duty exempted. This was later changed where vessels could be imported duty free. (Personal Communication- Robert Stone, Chair, Fiji Offshore Fisheries Council, March, 2002). Local Fishing vessels that landed catch at Ports in Fiji were exempt from paying access fee while foreign vessels were required to pay 5% of the landed value of catch but this was in practice never applied as all vessels were encouraged to land catch in local ports.

[iv] Disaggregated figures on fresh tuna exports are unavailable in official Statistics. These figures are based on customs data collected by the Bureau of Statistics. (The value of exports therefore is most likely underestimated since the value of exports on the exports documents does not necessarily reflect the prices paid at the fish auction market overseas).

[v] The Offshore Industry Council has been established in 1998 as a joint industry and Fisheries Division initiative with the aim of establishing a forum between the operators and other interest groups.

[vi] Personal Communication- Robert Stone, Chair, Offshore Fisheries Council,

[vii] Fresh fish exports require high quality standards in all the major markets such as in Japan, US (HACCAP based Programme) and the EU (certification of food safety and quality by a competent authority).

[viii] Personal Communication, Deo Chandra, Production Manager, Fiji Fish Marketing Limited, March 2002; David Lucas – Solander (Pacific) Limited, June 2001; Robert Stone – Oceans Traders Limited February 2002. [Suva, Fiji]

[ix] A study in 1998 indicated that the domestic value added for fishing vessels was around 40% of total income. This study looked at the direct value added from vessels and did not consider the various effects of taxes. See: C. Lightfoot, *Fiji's Sashimi Longline Fishery*, Fiji Fisheries Division, 1998.

[x] This social dimension is another reflection of the domestication policy that aims to secure rights of certain groups of people in order to reduce the income disparities in the economy. It is a more specifically defined form of domestication.

[xi] This is under the Constitution Amendment Act 1997, Chapter 5 (Social Justice Act) – which calls for a social justice and affirmative action plan. This policy provides a blueprint as a broad framework for specific strategies to address the socio-economic disparities and to increase economic productivity of the indigenous Fijians and Rotumans.

[xii] Annual Access fee for vessels less than 20 meters is $15,000 and for vessels over 20 meters is $20,000.

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